

SUMMARY OF THE INVENTION

[0007] The present invention provides a “generic” revenue management data model that substantially eliminates or reduces the disadvantages and problems associated with previously developed revenue management data models. The generic revenue management data model of the present invention can include a first data structure containing a representation of a set of network demands, a second data structure containing a representation of a set of network resources, a third data structure containing a representation of a set of resource bundles and a fourth data structure containing a representation of a set of resource bundle to demand links. The data model of the present invention can also include a fifth data structure, which includes a representation of a set of resource demands.

[0008] The present invention provides a substantial advantage over previously developed revenue management data models because the present invention is industry independent.

[0009] The present invention provides another important technical advantage over previously developed revenue management data models because the present invention is algorithm independent.

[0010] The present invention provides yet another important technical advantage over previously developed revenue management data models by facilitating the sequential application of optimization algorithms.

[0011] The present invention provides yet another important technical advantage over previously developed revenue management data models by facilitating the application of new revenue management algorithms.

[0012] The present invention provides yet another important technical advantage over previously developed revenue management data models by facilitating the decomposition of network problems to allow for local optimization.

[0013] The present invention provides yet another important technical advantage over previously developed revenue management data models because, from a training perspective, the present invention provides a unified language in which to express revenue management problems.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings in which like reference numerals indicate like features and wherein:

[0015] FIGURE 1 is a diagrammatic representation of one embodiment of a system for solving revenue management problems according to the present invention;

[0016] FIGURE 2 is a diagrammatic representation of one embodiment of a generic revenue management data model according to the present invention;

[0017] FIGURE 3 is a diagrammatic representation of an example airline network to which the present invention could be applied; and

[0018] FIGURE 4 is an entity relationship diagram for one example of a database for representing revenue management problems according to the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

[0019] Preferred embodiments of the present invention are illustrated in the FIGURES, like numerals being used to refer to like and corresponding parts of the various drawings.

[0020] Revenue management seeks to optimize profit, for example, by limiting access to inventory either by, for example, reducing the supply of a product or by manipulating the product's price. Typically, revenue management techniques apply mathematical algorithms (which can be contained in software programs stored on a tangible storage medium) to a set of revenue management problem data for the purpose of determining the optimal quantity or optimal price of a product. The present invention provides a generic revenue management data model for representing revenue management problems. Because the revenue management data model is generic, it is applicable to any number of industries, it can be used by many different algorithms and it facilitates both local and network optimization.

[0021] FIGURE 1 is a diagrammatic representation of one embodiment of a system 90 for solving revenue management problems. In system 90, revenue management problems can be solved by optimization engine 100. Optimization engine 100 can use software programming stored on a tangible storage medium to apply various algorithms to network data in order to determine the optimal supply and price values for products, such as airline tickets or advertising space, in a network. Optimization engine 100 can include external interface 110, data manager 120, scheduler 130 and solvers 140, 150 and 160. Optimization engine 100 can accept revenue management problem data and scheduling information from external systems such as forecaster 170, network coordinator 180 and schedule manager 190. Revenue management problem data might include data related to the demands placed on a network and the supply of products available in the network. For instance, optimizer 100 might receive a prediction of the demand for products from forecaster 170, receive information on supply from network coordinator 180 and receive scheduling information from schedule manager 190 (collectively called "problem information"). Problem information can be received by optimization engine 100 through external interface 110. Upon receiving the problem information, external interface 110 can split the problem information into revenue management problem data and optimization sequence data. The revenue management problem data and optimization sequence data can each be stored on a tangible storage medium. Furthermore, it should be understood that each